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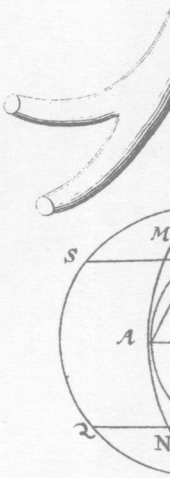
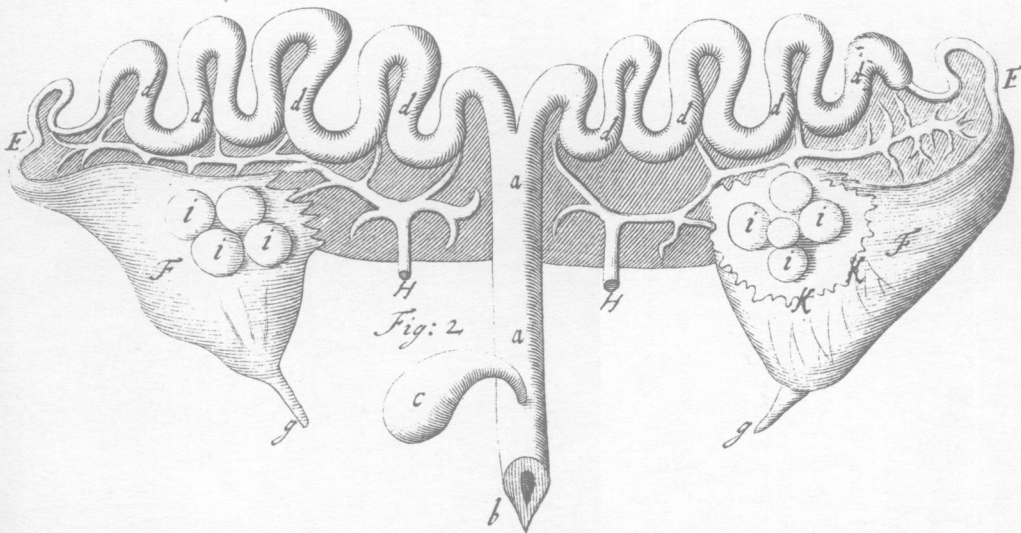
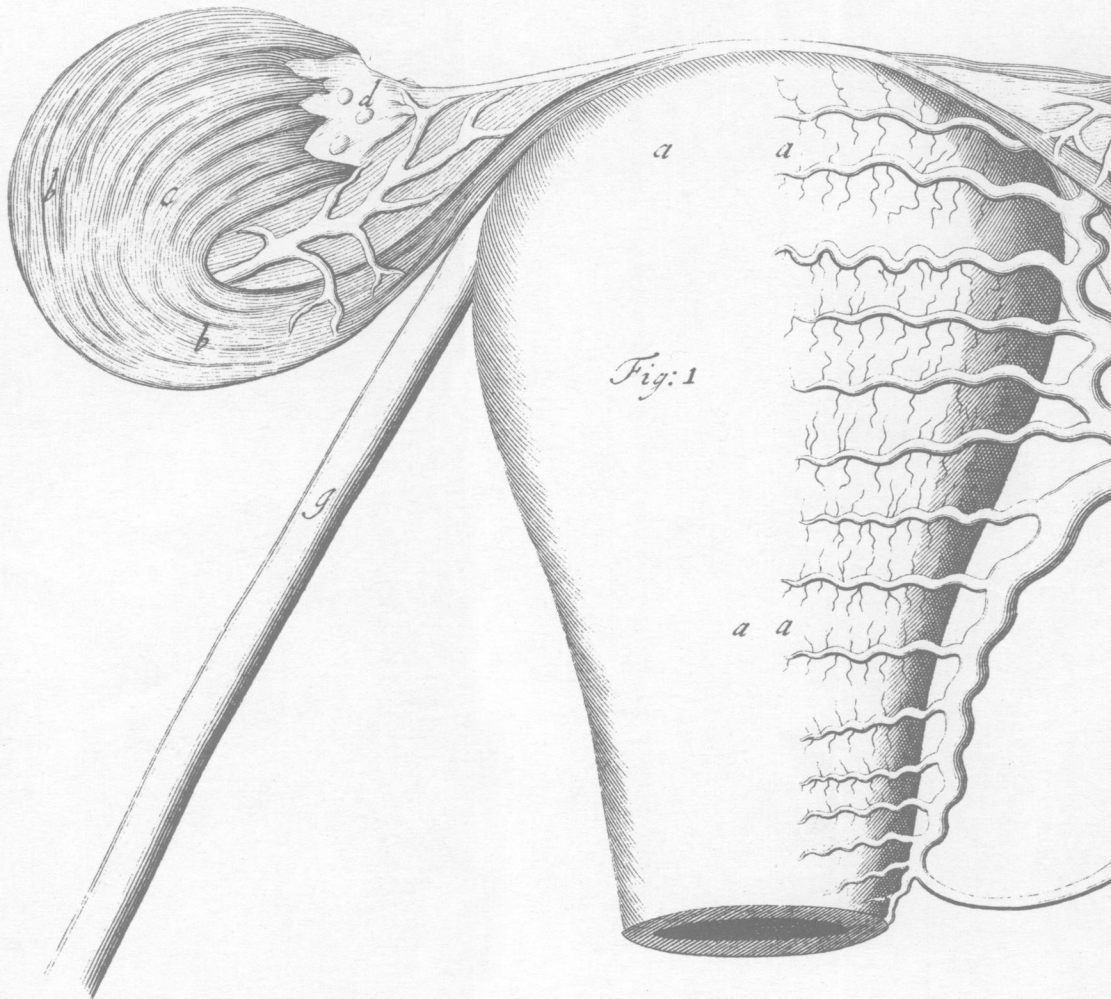
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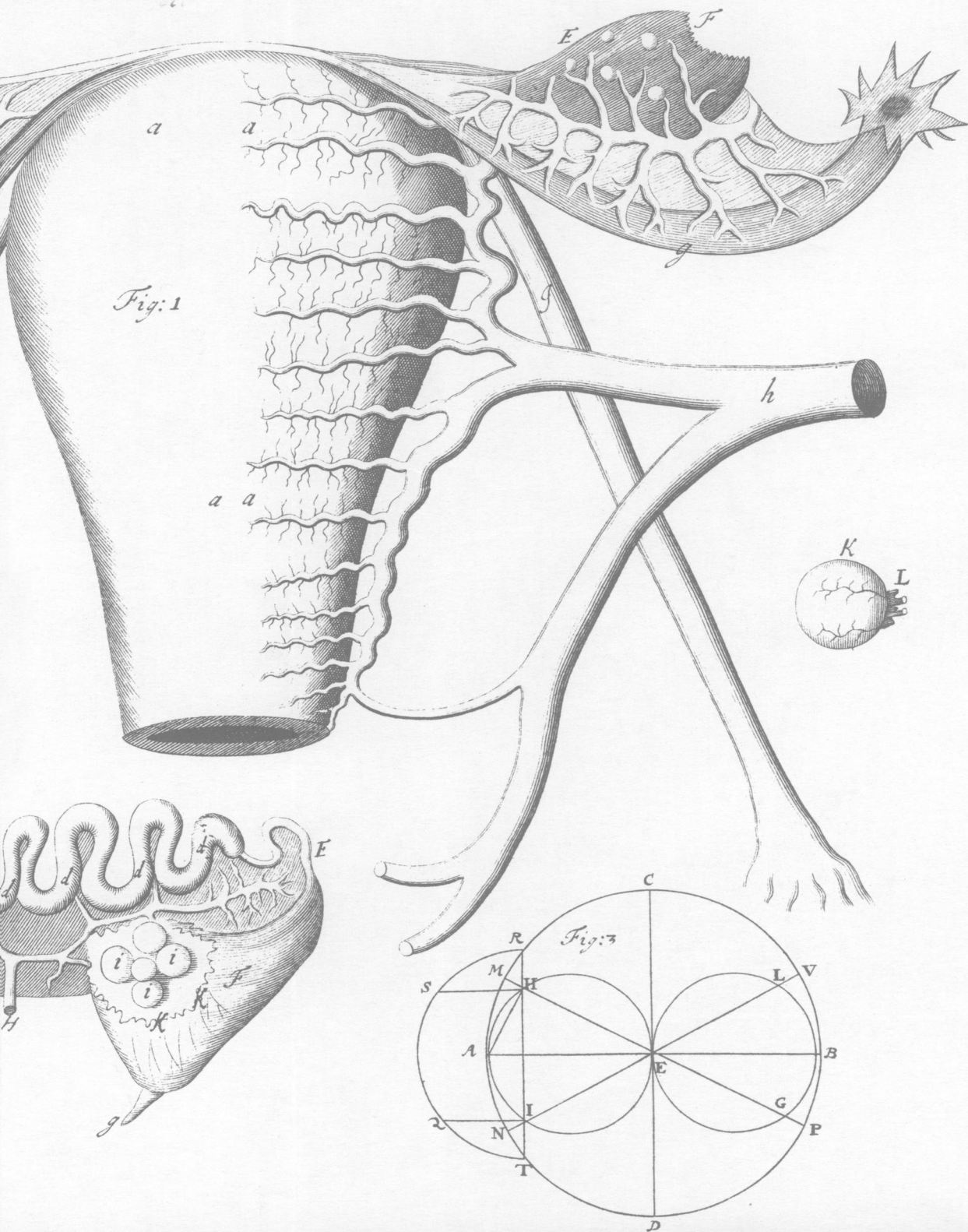
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Vigilies, and a constant Trepidation, with a reiterated snatching up of the lower Mandible, making signs as if he would have bit at any thing that was offered him. His Voice was uttered with a Canine hoarseness, and had an extraordinary resemblance to the barking of a Dog. He was moreover infested from that time with a *Singultus*, and foaming at the Mouth. Thus he continued the most part of the Day: being with him for a considerable time, to observe these wonderful *Phænomena*, I took the occasion (out of Curiosity) to present a Looking-glass before him, but found him so extremely disturbed thereat, that I immediately took it away: He was no sooner sensible of the Reflection, than that he threw his Head backwards with great violence, and continued barking, and snapping at every thing near him: In the Evening, notwithstanding such Alexipharmicks as had been exhibited, he sunk under the Oppression of these cruel Symptoms. I would very desirously have opened his Body, but it was forbidden by his Parents. The *Abdomen*, I perceived, was excessively inflated, his Limbs convuls'd, and the superfiice of the Body of a livid colour; the Muscles of the Face were drawn into such a form as did nearly represent a *Spasmus Cinicus*.

VI. Solutio Problematis Florentini de Testitudine Veliformi Quadrabili, a Davide Gregorio, M. D. ac R. S. S. Communicata. *

Prodiit Florentiæ Anno MDCXCII. *Ænigma Geometricum de miro opificio Testitudinis Hemisphæricæ quadrabilis quod eo spectabat ut detractis ex Hemisphærica Testitudine quatuor æqualibus similibus similiterque positis fenestris, reliqua Hemisphærica superficies sit quadraturæ verè* * *

verè Geometrica capax. Nec diu post Ænigmatis Auctor constructionem Problematis ingeniose admodum & expedite dedit in tractatu Italico de formatione & mensura Testudinum omnium ad Serenis. Etruriæ Principem ubi & nomen suum profiteri dignatus est, nempe à V. V. postremo Galilæi Discipulo, cum antea dispositis horum verborum ut in Anagrammate elementis sub ficto nomine D. Pio Lisci pusillo Geometra tectus latuisset.

Verum constructionis demonstrationem celat Author. Illam, cum Viris Doctis non ingratam futuram pro comperto habebrem, libuit paucis proferre. Præsertim cum nunc primum assignetur portio superficiei Sphæricæ quadrato æqualis. Ænigma igitur ab Auctore in sequens Problema convertitur.

Super hæmisphærii superficiem assignare portionem dato quadrato æqualem quod sic construit.

Vid. Fig. 3. Sphæra cujus Axis æqualis lateri dati quadrati exponatur per circulum ACBD in proposita Sphæra verticalem, cujus diameter horizontalis est AB, centrum E. Perforetur Sphæra duobus cylindris rectis quorum communes sectiones cum plano ACBD sunt circuli BLEG, AHEI diametris EB, EA descripti. Dico factum; hoc est à quolibet hæmisphærico Ver. Gr. superiori ACB ablatas esse per Cylindros perforantes quatuor figuras bilineares, duas scilicet in parte antica & duas in postica æquales similes & similiter positas, ita ut residua superficies hæmisphærica sit æqualis quadrato rectæ AB. Et quoniam hæmisphærica superficies, demptis spatiis quatuor bilinearibus prædictis, refert velum vento inflatum & tensum, Testudinemve hæmisphæricam quatuor fenestris interruptam quæ circulari basi AEB imposita, ipsi ad puncta A, E, E, B innititur, hanc pro jure suo appellat Testudinem Veliformem Florentinam quadrabilem, Vela Quadrabile Fiorentina.

Auctor deinceps in memorato tractatu plurima ad praxin attinentia profert, ut ope Torni & Terebræ cylindricæ tam hujus quam reliquarum quinque Testudinum fiant exemplaria: Atque in hanc rem alia quædam Problemata subtilia construit

construit quorum omnium demonstrationes ab Auctore consulto oramissæ facillime ex nunc proferendis consequuntur

Quod quatuor fenestræ in hemisphærio ut dictum est extrusæ sint figuræ æquales similes & similiter positæ satis liquet, reliquum est ut ostendamus reliquam superficiem hemisphæricam tetragonismi vere Geometrici esse capacem.

Ad Planum $CADB$ in puncto E erigi intelligatur normalis recta æqualis EA ; & super peripheriam $ACBD$ superficies cylindrica recta ejusdem altitudinis. Vulgo notam est portionem superficiei Sphæricæ inter quælibet duo plana circulo $ABCD$ parallela comprehensam æqualem esse portioni superficiei cylindricæ inter eadem plana; & horum annulorum similes portiones resectas à planis in erecta ex E normali se mutuo interfecantibus esse etiam æquales. Si jam ducendo innumera plana basi $ACBD$ parallela dicto modo designari intelligantur in superficie cylindrica partes respondentibus Sphæricis æquales, quæ è regione superficiei perforatione ablata designatur illi æqualis est. Quare patet residuam à perforatione superficiem æqualem esse residuæ superficiei cylindricæ dempta illa quæ è regione ablata per dicta innumera plana designatur. Ducatur diameter quælibet PM secans peripheriam AHE utcunque in H . Jungatur HA , per H ducatur RT normalis ad AB & parallela ad CD per E ductam, occurrens peripheriæ $ACBD$ in R & T & peripheriæ AIE in I . Super RT diametro fiat semicirculus cujus peripheriæ occurrant HS , IQ ad RT normales in S & Q . Hujus semicirculi planum intelligatur normaliter erectum ad circulum $ABCD$. Unde peripheria $RSQT$ erit in superficie hemisphærica, rectaque HS nunc ad planum $ACBD$ normalis, erit altitudo superficiei cylindricæ perforantis supra baseos punctum H . Idemque de quolibet puncto superficiei cylindricæ perforantis verum est, scilicet ejus altitudinem usque ad superficiem Sphæricæ supra quodvis in basi punctum H esse rectam HS ut dictum est, genitam, sed HS æqualis est HA sinui recto arcus MA , quoniam tam hæc quam illa est media Geometrica inter PH

Et HM, altera in circulo MAP altera in circulo Sphæræ etiam maximo per puncta M, S Et P transeunte.

Si in erecta in E ad planum ACBD normali, ab E sumatur recta æqualis HS aut HA Et ab extremo ejus puncto ducantur rectæ parallelæ ad PM Et VN, planum per illas extensum erit ad planum ACBD parallelum, Et rectæ hæc per puncta S Et Q transibunt, Et productæ usque ad superficiem cylindricam hemispherio circumscriptam abscindent ex lateribus cylindri rectas ipsis HS vel HA itidem æquales; comprehendenteque arcus æquales Et respondententes arcibus MN Et VP. Quod si alterum planum ~~hinc~~ ad minimam distantiam parallelum similiter ductum intelligatur, hæc duo per supra ostensa designabunt in superficie cylindrica annuli portionem æqualem portioni inter eadem plana à superficie hemisphærica perforatione ablata. Quod si similis constructio fieri supponatur ad quodlibet in periphæria AHE punctum portiones omnes in superficie cylindrica hemisphærica circumscripta dicto modo genitæ Et designatæ erunt æquales superficiæ Sphæricæ perforatione ablata. Quare residua superficies hemisphærica æqualis erit reliquæ superficiæ cylindricæ constatæ ex rectis omnibus HA ad respectiva puncta M, N, V Et P erectis, seu figuræ sinuum rectorum semiperipheriarum ACB ADB, hoc est, per dudum à Geometris cognita, quadruplo quadrato Radii AE, sive denique quadrato diametri AB. Cumque duæ integræ figuræ comprehensæ à communi sectione prædictæ superficiæ cylindricæ perforantis cum superficie Sphærica, æquales sint quatuor, ablati quatuor spatiis bilinearibus (ut supra in constructione) æqualem esse quadrato diametri AB. q. e. d.

semisphæricæ secundum
statot residuum in
periphæria hemisphæricæ
vicinæ ACB

Si semiperiphæria AHE ita inflectatur ut congruat cum æquali quadrante periphæriæ ARC; punctum H incidet in punctum M ob æquales arcus AH, AM, Et HS altitudo ad H superficiæ cylindricæ super AHE insistentis congruet cum æquali HA altitudine ad M figuræ sinuum rectorum super AMC erectæ; idemque in reliquis punctis fiet
Unde

Unde curva quæ est communis interseccio superficiei Sphæricæ cum superficie cylindrica super basi AHE, quamvis non jaceat in eodem plano inflexa, ut dictum est, congruet & proinde æqualis est curvæ terminanti figuram sinuum rectorum; hoc est communi Sectioni superficiei cylindricæ super quadrantalem arcum ARC erectæ cum plano secante planum baseos in Recta BA ad angulos semirectos; sive quadranti curvæ Ellipseos cujus minor Axis est AB major vero potest hujus duplum. Adeoque perimenter veli quadrabilis Florentini ex hujusmodi quatuor constans æqualis est perimetro dictæ ellipseos.

Sed & hoc amplius adnotare non pigebit, superficies cylindrorum duorum perforantium intra Sphæram, æquales esse superficiei Sphære post perforationem relictæ, sive duplici Velo Florentino, hoc est duplo quadrato diametri. Atque hoc exinde patet quod Velum Florentinum æquale sit figuris quatuor sinuum rectorum quadrantis & superficies perforans iisdem etiam sit æqualis, quoniam illis congruit si inflectio fiat ut supra.

Hoc tantum addam, Considerationem figuræ sinuum rectorum [cujus etiam partes in quadrata facile mutantur] sufficere ad demonstrationem eorum omnium quæ de aliis solidis torno elaboratis vel cylindro perforatis, eorumque superficibus ab Acutissimo Geometra V. V. [Vincentio Viviani] fallor dignissimo Galilæi Discipulo proferuntur; dum fabricam & Mensuram Testudinum docet. Speciatim superficies Testudinis Scaphoidis Romanæ Volta a Schilo alla Romana ex octo figuris sinuum rectorum arcus quadrantalis constat, ac proinde Testudini Veliformi Florentinæ æqualis est. Unde patet quomodo æqualibus quadratis superimponi possunt duæ Testudines quarum altera est undique clausa. altera quatuor fenestris interrupta, utraque quadrati baseos dupla.

Ex supra demonstratis reliqua facile eliciuntur, cum præcipua quæ celare voluit Auctor hactenus demonstrantur.